SERVICE MANUAL

STEREO RECEIVER

SANYO

JCX2400KU

SPECIFICATIONS

Amplifier Section	
Total music power	240 watts (at 4 ohms)
Continuous power	75 watts x 2 (at 4 ohms)
	55 watts x 2 (at 8 ohms)
Total harmonic distortion	less than 0.1% (—3dB power/1kHz)
Power band width	20Hz/30kHz (—3dB power)
Frequency response	7Hz/50kHz (+0.5dB/—3dB)
Input sensitivity and impedance	
PHONO	2.5mV/50k ohms
AUX	150mV/50k ohms
TAPE 1 PLAY	150mV/50k ohms
TAPE 1 REC/PB	150mV/50k ohms
MIC	2mV/10k ohms
REC/PB (TAPE 2)	150mV/50k ohms
Output	
TAPE 1 REC	150mV
TAPE 1 REC/PB	0.55mV/k ohm
REC/PB (TAPE 2)	0.55mV/k ohm
Tone control response	
BASS at 100Hz	±10dB
MID at 1kHz	±6dB
TREBLE at 10kHz	±10dB
Loudness control response	
at 100Hz	+10dB
at 10kHz	+6dB
Hum and noise ratio	
PHONO	70dB
AUX	90dB
TAPE 1 PLAY	90dB
Damping factor	more than 25 (20Hz/20kHz at 8 ohms)

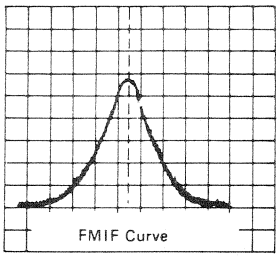
FM Tuner Section	
Frequency range	87.5 — 108MHz
Usable sensitivity	1.6μV (DIN)
Signal-to-noise ratio	70dB (at Mono)
	65dB (at Stereo)
Harmonic distortion	0.2% (at Mono)
	0.3% (at Stereo)
AM suppression	more than 60dB
Spurious response	more than 70dB
Alternate channel selectivity	more than 55dB (±300kHz DIN)
Image rejection	more than 50dB
Capture ratio	1.3dB
Stereo separation	40dB (at 1kHz)
Antenna input	300 ohms balanced
MW Tuner Section	
Frequency range	510 — 1605kHz
Sensitivity	300μV/m
Signal-to-noise ratio	50dB
Image rejection	48dB
Selectivity	33dB (10kHz)
Antenna	External ferrite bar antenna
General	
Power requirements	AC: 125/220V, 50Hz
Power consumption	320W
Dimensions	17-3/8"W x 5-7/8"H x 14-9/16"D
	(440 x 146 x 370 mm)
Weight	Approx. 31 lbs. (14 kg)

* Specifications subject to change without notice.

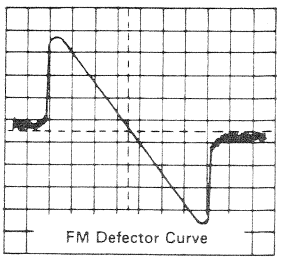
WM-2863

FM IF ADJUSTMENT

1. V curve adjustment
   1) Connect TP3 (HOT) and TP6 (EARTH) to the output terminal of the sweep generator, and TP4 (H) and TP104 (E) to the input terminal.
   2) Connect a resistance load of about 10 to 50 K-ohms to the input of the sweep generator and disconnect the tuning meter leadwires from the circuit board.
   3) Cut off ceramic capacitor C213 (0.022μF) at one end.
   4) Make adjustment while keeping the output from the sweep generator at the low level (where noise appears on the waveform).
   5) While watching the sweep waveform, adjust the T201 until the sweep waveform presents the pattern as in Fig.1.
      * TP6 is a shield plate.



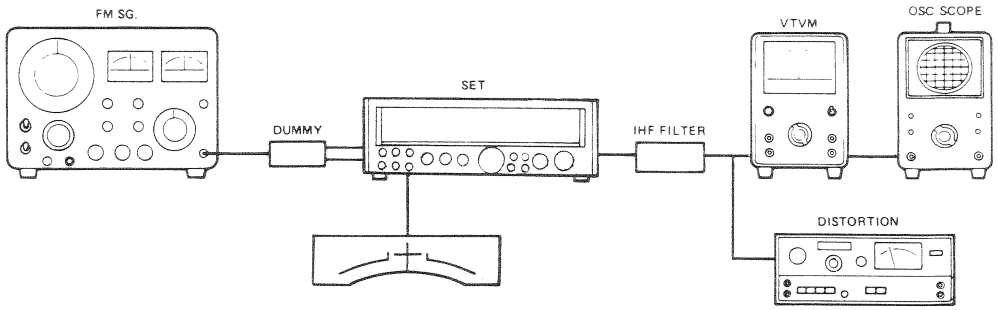
2. S curve adjustment
   1) Connect TP3 (H) and TP6 (E) to the output the sweep generator. Connect TP201 (H) and TP104 (E) to its input.
      NOTE: It is necessary to connect a capacitor (1μF/16V) to the input of the sweep generator (H) for cutting DC current.
   2) Adjust the T202 until the S curve presents the pattern as in Fig. 2. Avoid turning the T203 unless absolutely necessary.



CENTER ADJUSTMENT OF TUNING METER

Set FM SG as follows: modulation frequency 1KHz, frequency deviation 75KHz DIV. (100% modulation).
Connect a balanced dummy of 300 ohms between FM SG and the unit (at the 300 ohm terminal of the external antenna).

1) Set the tuning dial of the unit to 98MHz (where no Broadcasting signal is coming in).
2) While keeping the FM SG output level to 0 (less than 10dB), adjust the T202 until the tuning meter needle stands at the center point.
3) Adjust the frequency output of FM SG so that the tuning meter needle stands at the center point.
4) Reduce the distortion factor a minimum by turning the T203. Make this adjustment at the FM SG output level of 60 dB (1mV).
5) Repeat steps 2) and 3) above.
6) Turn the core of T201 only slightly until the distortion factor becomes minimal.
7) Set the FM SG output level to 0. Confirm tuning meter needle stands at the center point. If needle is not at center point, repeat from steps 2).
8) Set the FM SG output level to 60dB. Conform the distortion factor gets minimum when the tuning meter needle is at center point.
   NOTE: Use Hum and Sub-carrier Filter to get accurate distortion factor.

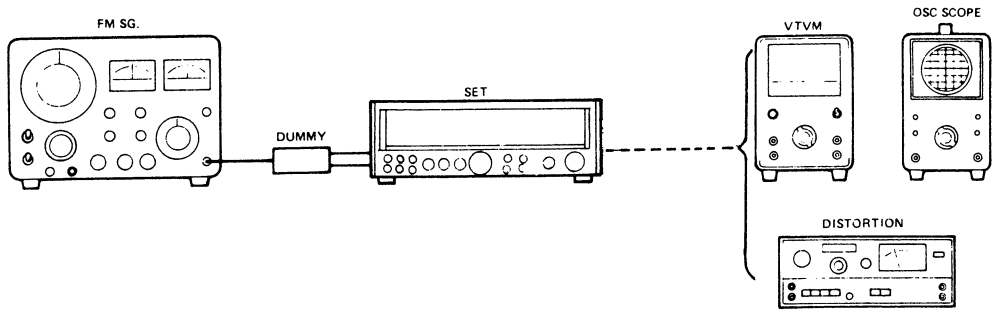


FM TRACKING

Set FM SG as follows: modulation frequency 1KHz, frequency diviation 75KHz DIV. (100% modulation).
Flip the MODE switch of the unit to "MONO".

1) Make LOW TRACKING adjustment by means of L102 and L101. Use 90MHz FM signal for this purpose.
2) Make HIGH TRACKING adjustment by means of CT2 and CT1. Use 106MHz FM signal for this purpose.
3) Make complete TRACKING adjustment by repeating steps (1) and (2).

* When properly adjusted, the distortion factor of the output from the unit is reduced to a minimum, provided that the distortion factor of the SG output is about 3%.



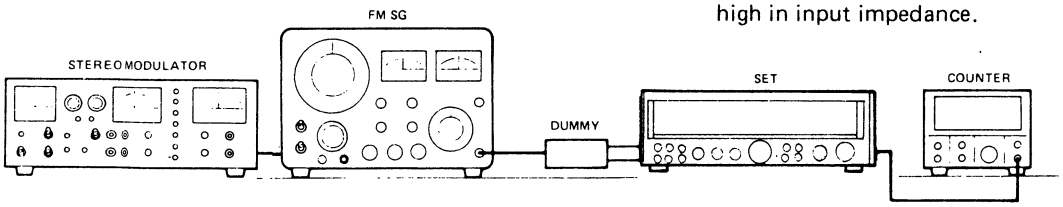
FM VCO ADJUSTMENT

Set the frequency of FM SG to 98MHz (where no broadcasting signal is coming in), the muting switch of the unit to ON and the pilot signal of the stereo modulation to a modulation degree of 9%.

1) Increase the output level of FM SG until the stereo pilot lamp of the unit glows. Then, keep the glowing of the stereo pilot lamp for more than 10 seconds).
2) Adjust R309(SVR) until the frequency counter reading becomes 19000Hz ±19 Hz immediately after cutting off the SG output (viz. after the stereo pilot lamp has gone out).

* Do not make this adjustment immediately after setting to ON the power switch of the unit.

* For this adjustment, use a frequency counter relatively high in input impedance.

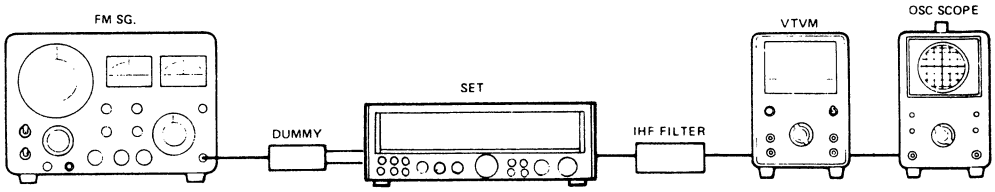


FM MUTING LEVEL ADJUSTMENT

Set FM SG as follows: modulation frequency 1kHz. frequency deviation 75kHz DIV. (100% modulation). Then, set the muting switch of the unit to ON.

1) Set FM SG to 98MHz and tune the unit to that frequency level.
2) Apply 16dB to the 300 ohm terminal antenna.
3) Turn R227(SVR) and set it at the position where the VTVM needle stops swinging or the waveform on the oscilloscope becomes very small.

* When the muting function is ON, the waveform decreases in size, and weak signals and noise are cut off.



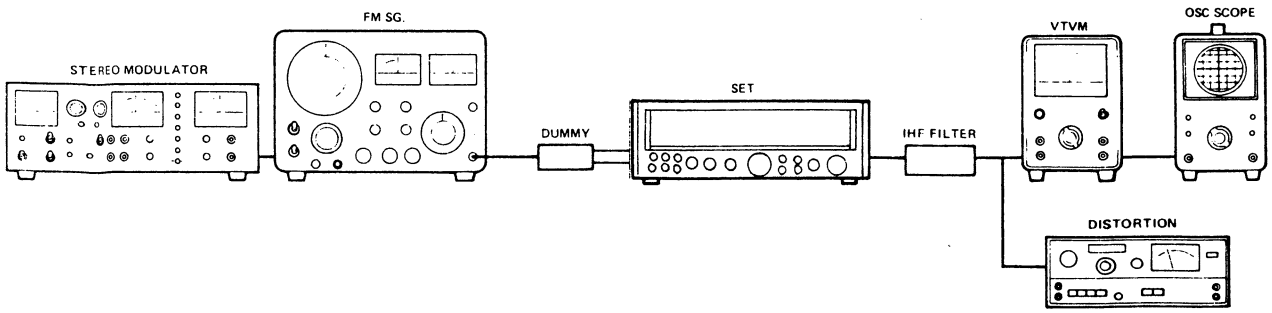
SEPARATION

Set FM SG as follows: modulation frequency 1KHz, frequency 98MHz. Set the pilot signal of the stereo modulator to a modulation degree of 9%. PL + L + R = 75KHz DIV. (9% + 91%)

Select the "STEREO" mode by the mode switch of the unit.

1) Set the input to the unit (i.e. voltage at the 300 ohm terminal of the external antenna) to 60dB (This corresponds to 66dB–1.995mV in terms of FM SG output).
2) Generator L-R signals by the stereo modulator and tune the unit completely to their level. (In this state, the distortion factor is reduced to a minimum.)
3) Switch the stereo modulator from R to L channels. Reduce signel output leakage of each channel to a minimum by adjusting R306(SVR).

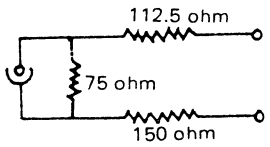
* When making this adjustment, use a lowpass filter and eliminate 19KHz and 38KHz carrier components.



FM ALIGNMENT

Step	Adjusting Circuit	Connections		SG frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	I.F.	Connect sweep generator to FM TP-3 (H) & TP-6 (E)	Connect oscilloscope to test point TP-4 (H), TP104 (E)	10.7 MHz (0% modulation)	Near max. capacitance of tuning gang with no station signal.	T201	
2	Ratio Det.		Connect oscilloscope to test point TP-201 (H), TP104 (E)			T202	
3	OSC.	Connect FM SG. to FM ANT. Terminals. TP101 (H) & TP102 (E)	Connect VTVM to TP302 (H) & TP104 TP303	87.4 MHz (400 Hz 30% modulation)	Low end of dial scale	L103	Max.
4				109.0 MHz (400 Hz 30% modulation)	High end of dial scale	CT3	
5	ANT.	Connect FM SG. to FM ANT. Terminals. TP101 (H) & TP102 (E)	Connect VTVM to TP302 (H) & Ground TP303	90.0 MHz (400 Hz 30% modulation)	90.0 MHz on dial scale	L101, L102	Max.
6				106.0 MHz (400 Hz 30% modulation)	106.0 MHz on dial scale	CT1, CT2	
7	Repeat adjustments						

PREPARE:
1. **Set the dial pointer to very left line of dial scale.**
2. Connect sweep generator, FM SG. VTVM and oscilloscope. FM ANT input impedance is 300 ohm.
3. **Use a screwdriver with plastic grip for all adjustments.**
4. Use a 300 ohm balanced dummy load.



MW ALIGNMENT

Step	Adjusting Circuit	Connections		SG frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	I.F.T.	Connect sweep generator to Test Loop	Connect oscilloscope to TP302 (H)&TP104 TP303	460 KHz (400 Hz 30% modulation)	Low end of dial scale. With no station signal.	T204	Max.
2	OSC.	Connect AM SG to Test Loop.	Connect VTVM to TP302 (H) & TP104 TP303	505 KHz (400 Hz 30% modulation)	Low end of dial scale	L105	Max.
3				1700 KHz (400 Hz 30% modulation)	High end of dial scale	CT5	
4	ANT.	Connect AM SG to Test Loop.	Connect VTVM to TP302 (H) & TP104 TP303	600 KHz (400 Hz 30% modulation)	600 KHz on dial scale	L104	Max.
5				1400 KHz (400 Hz 30% modulation)	1400 KHz on dial scale	CT4	
6	Repeat adjustments.						

PREPARE:
1. **Set the dial pointer to very left line on dial scale.**
2. **Use a screwdriver with plastic grip for all adjustments.**
3. **Selector switch to "MW".**
4. Connect sweep generator, AM SG, VTVM and oscilloscope.

19KHz TRAP ADJUSTMENT

Set the frequency of FM SG to 98MHz and the pilot signal of the stereo modulator to a modulation degree of 9%.

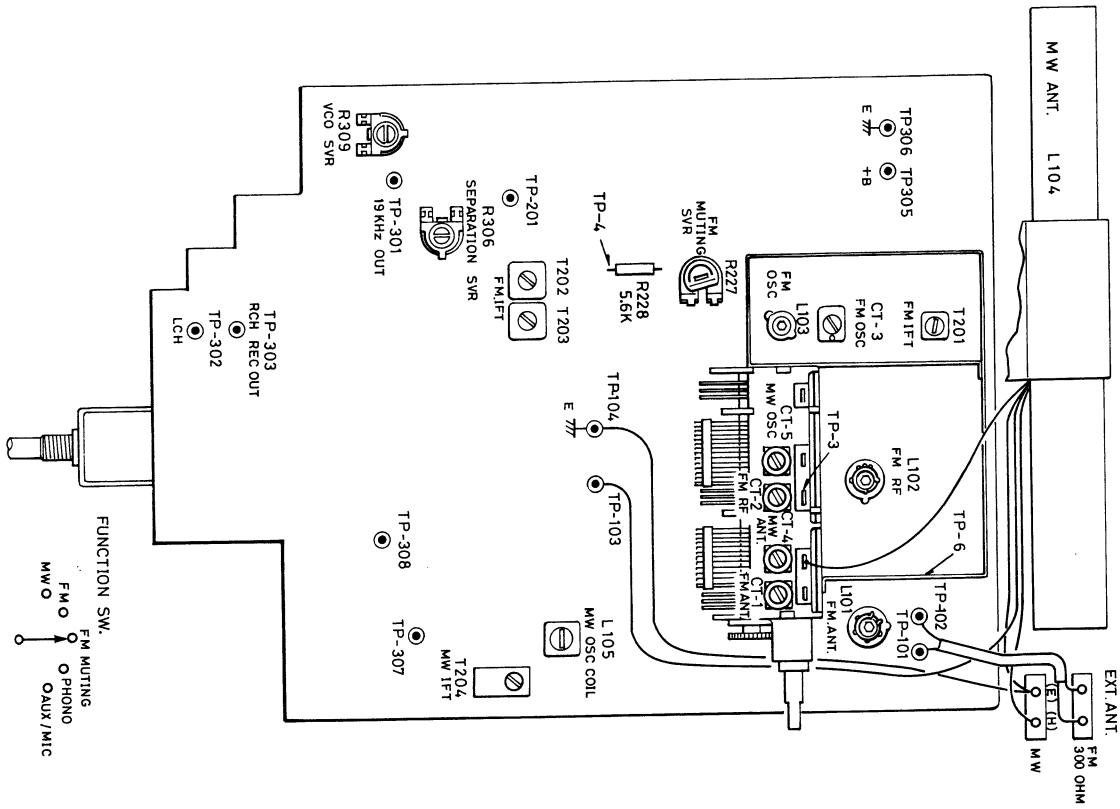
1) Set the tuning dial of the unit to 98MHz.
2) Apply 60dB to 300 ohm terminal antenna.
3) Turn L301, L302 until the leakage of 19KHz becomes minimum.
   NOTE: Use 200Hz HIGH-PASS FILTER.

MW TRACKING

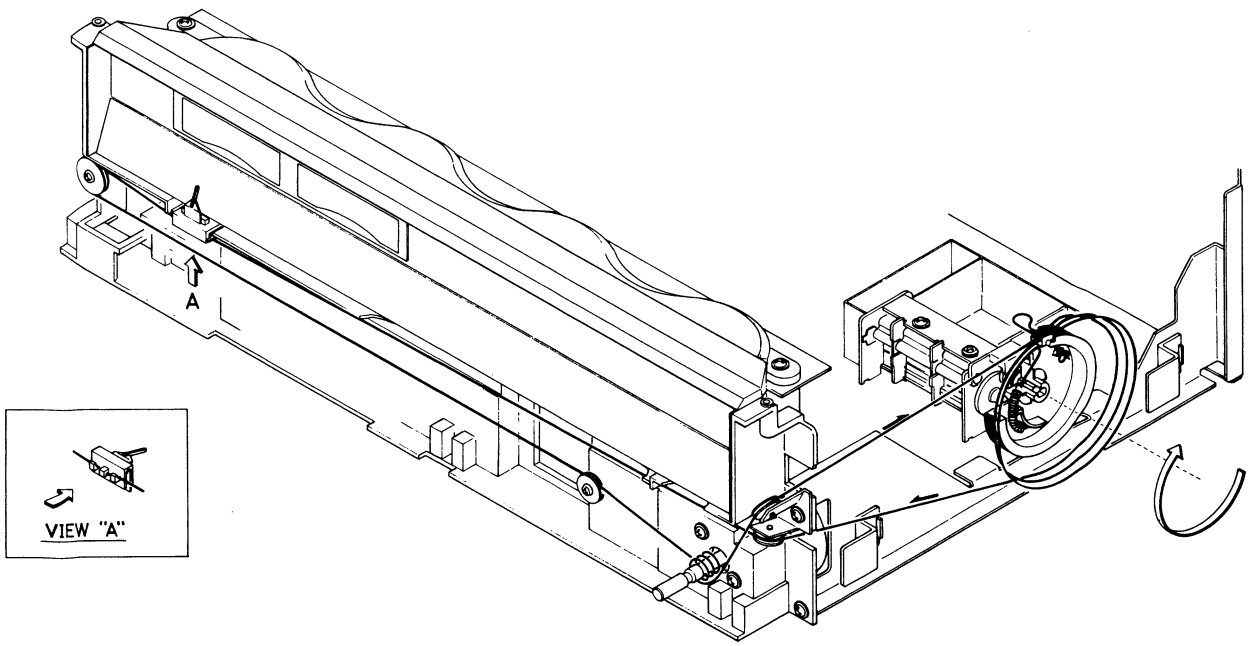
Use same method as usual.

1) Set the frequency of AM SG to 600KHz and the tuning dial of the unit to 600KHz.
2) Set the position of BAR ANTENNA as requested and dress the leadwires of BAR ANTENNA before making adjustment.
3) Turn the core of L104 (BAR ANTENNA) until the output of the unit becomes maximum.
4) Set the frequency of AM SG to 1400KHz and the tuning dial of the unit to 1400KHz.
5) Turn CT4 (VC TRIMMER) until the output of the unit becomes maximum.
6) Repeat the above steps from 1). until the output of the unit becomes maximum at both 600KHz and 1400KHz.
   NOTE: Use plastic screw driver for adjustment.

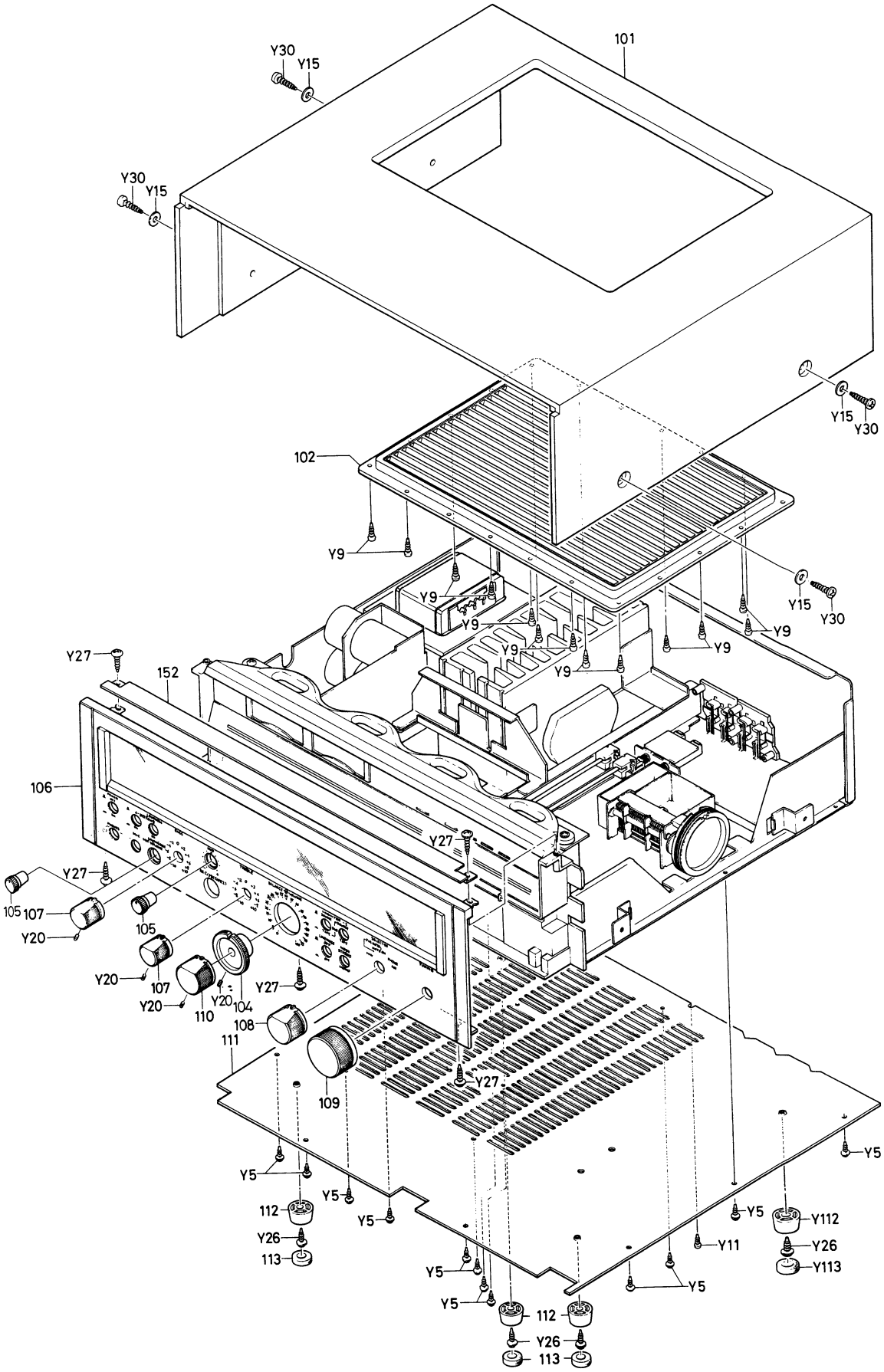
PARTS LOCATION



DIAL CORD STRINGING



CABINET EXPLODED VIEW



PARTS LIST

Ref. No.	Part No.	Description	Q'ty
PACKING			
	141-6-132T-82500	Individual Carton	1
	141-6-144T-41600	Styrol Filler	2
	141-6-231T-25450	Inner Polyethylene Bag, Printed Matter	1
	141-6-410T-02500	Instruction Booklet	1
	141-6-231T-60800	Inner Polyethylene Bag, Set	1
	141-6-415T-15600	Notice, Fuse	1
	141-6-231T-06100	Inner Polyethylene Bag, Fuse Accessories	1
	141-6-231T-10250	Inner Polyethylene Bag, Power Supply Cord	1
	123-6-453R-00100	Inspection Sheet	1
	141-6-231T-06100	Inner Polyethylene Bag, Wrench	1
	141-6-421T-32500	Schematic Diagram	1
	141-6-415T-19200	Notice, SWEDISH	1
	141-6-415T-20500	Notice, HOLLANDER	1
ACCESSORIES			
	4-245T-00100	Antenna, EXT. FM Antenna	1
	4-234T-06371	Fuse	2
	141-2-419T-00200	Wrench, for Rotary Knob	1
CABINET			
101	141-9-111T-12000	Cabinet Assembly	1
102	141-9-242T-00100	Lattice Assembly	1
104	141-2-163T-44300	Rotary knob, Balance	1
105	141-0-163T-14200	Rotary knob Assembly, Mid Mic.	2
106	141-9-122T-06400	Front Panel Assembly	1
107	141-0-163T-13500	Rotary Knob Assembly, Bass & Treble	2
108	141-0-163T-12400	Rotary Knob Assembly, Selector	1
109	141-0-163T-12500	Rotary Knob Assembly, Tuning	1
110	141-0-163T-13700	Rotary Knob Assembly, Volume	1
111	141-2-125T-12400	Bottom Lid	1
112	141-2-174T-04700	Stand	4
113	141-2-441T-05000	Cushion	4
CHASSIS			
114	141-2-126T-21701	Back Lid	1
115	141-2-315T-14300	Reinforcement, Left Side	1
116	141-2-315T-14400	Reinforcement, Right Side	1
117	141-2-315T-14500	Reinforcement, Center	1
118	141-2-310T-05000	Bracket, Reinforcement (112) Mtg.	2
119	141-2-310T-06400	Bracket, PT Mtg.	1
120	141-2-464T-26000	Fixer, ANT Lead	1
121	141-2-315T-15200	Reinforcement, Center	1
122	141-2-310T-07200	Bracket, Bracket (115) Mtg.	1
123	141-2-214T-02100	Bracket, Front Frame	1
124	141-2-421T-20900	Special Screw, Pulley Mtg.	4
125	141-2-661T-71200	Pulley, Large size	1
126	141-2-661T-71300	Pulley, Small size	3
127	141-2-521T-01600	Flywheel, Tuning	1
128	141-2-524T-07600	Bracket, Flywheel Mtg.	1
129	141-2-210T-05700	Bracket, Bracket Frame (119) Mtg.	2
130	141-2-210T-05600	Bracket, Reinforcement (113) Mtg.	1
131	141-2-464T-08700	Fixer, Lead Retainer	9
132	141-2-464T-20671	Fixer, Lead Retainer	8
133	141-2-566T-06600	Tuning Shaft	1
134	141-2-310T-04700	Bracket, Pulley Mtg.	1
135	141-2-464T-14400	Fixer, AC Cord	1
136	141-2-753T-23900	Shaft, Power Switch Connection Rod	1
137	141-2-411T-08100	Plate Nut	1
138	141-2-453T-30500	Washer, Graphite Nylon Washer 4.1 x 6.5 x 0.13 mm	2
139	4-231T-53672	Switch, Voltage Select	1
140	141-2-753T-24000	Shaft, for Tape Monitor Select	2
142	141-2-753T-31100	Shaft, Speaker Select	2
143	141-2-753T-09200	Joint, Tape Monitor, Speaker Select	4
144	141-2-852T-43900	Wire Spring, Joint (137,139) Mtg.	4
145	141-2-852T-44100	Wire Spring	1
146	141-2-472T-01201	Lug, Reinforcement (117) Mtg. for Lead Retainer	4
148	123-2-457R-11700	Special Washer, Selector Switch Mtg.	1

Ref. No.	Part No.	Description	Q'ty
CHASSIS			
149	141-2-246T-12900	Sheet, Pointer (157)	1
150	141-2-329T-05000	Reflector, FM Stereo Lamp Cover	1
151	141-2-153T-31200	Escutcheon, Bracket Frame (119) Mtg.	2
152	141-2-328T-05200	Shield Light, on the Reflector (150)	1
153	141-9-146T-01200	Dial Scale Assembly	1
154	141-2-329T-04500	Reflector, Dial Illuminate	1
155	141-0-161T-02800	Push Button Assembly, Mode/FM Muting/Hi-Filter/Loudness	4
156	141-0-161T-02900	Push Button Assembly, Power/ Speaker/Monitor	5
157	141-2-340T-00200	Rope 0.5 x 2000 mm	1
158	141-2-538T-07300	Drum, VC	1
159	141-2-855T-14800	Coil Spring, Drum Mtg.	1
161	141-9-511T-00400	Pointer Assembly	1
162	141-2-411T-08700	Plate Nut, DIN socket	1
164	141-2-310T-08500	Bracket, Fuse	1
166	141-2-472T-02000	Lug, Mic VOL	1
167	141-2-327T-16900	Insulator, Fuse Holder	1
ELECTRICAL PARTS			
201	4-251T-72200	Power Transformer	1
202	141-2-310T-07500	Bracket, PT Mtg.	1
203	4-243T-77173	Power Supply Cord	1
205	141-2-383T-04800	Fuse Holder, SP	1
206	4-234T-06371	Fuse	2
207	4-237T-07000	Terminal Board, SP Terminal	2
208	141-2-382T-07000	Terminal, Earth	2
209	4-511T-08200	Meter, Signal	1
210	4-511T-08300	Meter, Tuning	1
211	4-235T-43900	Socket, Meter Connect	1
212	4-235T-44400	Socket FM	1
213	4-235T-44500	Socket AM	1
214	141-2-382T-06900	Terminal, GND.	1
215	4-257T-24102	Antenna Coil Assembly, L104	1
216	141-2-369T-05400	Bracket, Antenna Coil (215) Mtg.	1
217	141-2-243T-02700	Base, Antenna Coil (215) Mtg.	2
220	4-231T-37000	Switch, Power Muting	1
221	141-2-310T-07600	Bracket, Power switch PCB (219) Mtg.	1
222	141-2-253T-07500	Joint, Shaft (136) Mtg.	1
223	141-2-464T-08800	Fixer, Lead Wire Dressing	4
225	141-2-310T-08300	Bracket, VR Mtg.	1
227	141-2-368T-12800	Heat Sink, IC	2
228	141-2-310T-07300	Bracket, Heat Sink & Main AMP P.C.B (226) Mtg.	1
229	141-2-310T-07400	Bracket, Heat Sink & Main AMP P.C.B (226) Mtg.	1
230	141-2-310T-07000	Bracket, Heat Sink (227) Rear Mtg.	1
231	141-2-310T-07100	Bracket, Heat Sink (227) Front Mtg.	1
233	141-2-310T-06900	Bracket, Electrolytic (C912, 913) Mtg.	1
234	141-2-377T-21800	Bracket, DC Power P.C.B (232) Mtg.	1
238	4-235T-45900	Socket, Phone to Tuner	1
240	4-235T-44000	Socket 7 Pin, from Indicator PCB (241)	1
248	141-2-310T-08400	Bracket	1
249	4-234T-01101	Fuse 250V 315mA	2
250	4-234T-04771	Fuse 250V 1.4A	1
251	141-2-246T-19900	Sheet	1
252	141-2-327T-16600	Insulator	
253	4-222T-58900	Variable Resistor 20K-B Mixing (VR721)	
HEADPHONE PCB ASSY			
218	141-9-230T-30503	Printed Circuit Board Assembly, Headphone	1
	4-235T-36771	Socket, Headphone	1
	141-2-382T-07300 / 4-237T-00100	or Terminal, Wire Wrapper Pin	3
R789, 889		Metal Oxide Film Resistor 390 ohm ±5% 2W	2

PARTS LIST

Ref. No.	Part No.	Description	Q'ty
POWER SW PCB ASSY			
219	140-9-230T-66900	Printed Circuit Board Assembly, Power Switch	1
	4-231T-60900	Push Switch, Power	1
	4-234T-03671	Fuse 250V 2A	1
	4-234T-06271	Fuse 250V 3.15A	1
	141-2-382T-07300 / 4-237T-00100	or Terminal, Wire Wrapper Pin	6
	141-6-476T-10000	Indication Label	1
C901	4-223T-04700	Capacitor	2
	141-2-381T-01800	Fuse Bracket	4
TONE PCB ASSY			
224	140-9-230T-67000	PCB assy, TONE AMP	1
VR751,851 752,852	4-222T-58700	Variable resistor, BALANCE, VOL 250K(MN) 100K-B x 2	1
VR753,853 755,855	4-222T-57000	Variable resistor, BASS, TREBLE	2
S5,6	4-231T-63900	Switch, LOUDNESS, MODE	1
	4-237T-00100 / 141-2-382T-07300	or Terminal	15
Q751,851, 753,853		Transistor 2SC1571	4
Q752,852		Transistor 2SA929	2
	CAPACITORS		
C751,851		Ceramic 680pF ±10% 50V	2
C762,862		Ceramic 22pF ±5% 50V	2
C754,854		Ceramic 220pF ±10% 50V	2
C765,865		Mylar 470pF ±10% 50V	2
C756,856, 757,857		Mylar 0.027μF ±5% 50V	4
C752,852		Mylar 0.033μF ±5% 50V	2
C758,858, 759,859		Mylar 0.0047μF ±5% 50V	4
C760,860		Mylar 0.0018μF ±5% 50V	2
C766		Electrolytic 330μF 35V	1
C763,863		Electrolytic 100μF 6.3V	2
C761,861, 764,864, 791,891		Electrolytic 1μF 50V	6
C753,853		Electrolytic 0.47μF 50V	2
C755,855		Electrolytic 2.2μF 50V	2
	RESISTORS		
R770,870		Carbon 180K ohm ±5% 1/4W	2
R751,851, 756,856		Carbon 1M ohm ±5% 1/4W	4
R773,873		Carbon 470K ohm ±5% 1/4W	2
R757,857		Carbon 330K ohm ±5% 1/4W	2
R755,855		Carbon 82K ohm ±5% 1/4W	2
R763,864 764,864		Carbon 27K ohm ±5% 1/4W	4
R759,859		Carbon 22K ohm ±5% 1/4W	2
R761,861, 762,862		Carbon 15K ohm ±5% 1/4W	4
R753,853		Carbon 8.2K ohm ±5% 1/4W	2
R752,852 765,865, 766,866		Carbon 6.8K ohm ±5% 1/4W	6
R760,860		Carbon 4.7K ohm ±5% 1/4W	2
R769,869		Carbon 33K ohm ±5% 1/4W	2
R754,854, 774,874, 771,871		Carbon 1K ohm ±5% 1/4W	6
R758,858		Carbon 560 ohm ±5% 1/4W	2
R767,867, 768,868		Carbon 6.8K ohm ± 5% 1/4W	4
R772,872		Carbon 5.6K ohm ±5% 1/4W	2
R791,891		Carbon 100K ohm ±5% 1/4W	2
R792,892		Carbon 1.5K ohm ±5% 1/4W	2

Ref. No.	Part No.	Description	Q'ty
MAIN AMP PCB ASSY			
226	140-9-230T-66700	Printed Circuit Board Assembly, Main AMP	1
IC781,881	4-206T-01200	IC STK-084, Power	2
	4-232T-04900	Relay	1
	4-209T-01171	Resistor	1
	141-2-382T-07300	Terminal, Wire Wraper Pin	14
L781,881	4-265T-04800	V.H.F. Coil	2
Q401,402		Transistor 2SC536G	2
Q403		Transistor 2SD438F	1
D401,402 403,404		Diode 1S2473	4
D405,406		Diode 1S2472	2
D407		Diode 1N4002	1
	CAPACITORS		
C784,884		Ceramic 2pF ±20% 50WV	2
C781,881		Mylar 470pF ±10% 50WV	2
C789,889		Mylar 0.047μF ±20% 50WV	2
C782,882		Electrolytic 1μF 35WV	2
C403		Electrolytic 4.7μF 35WV	1
C786,788 886,888		Electrolytic 10μF 50WV	4
C783,883		Electrolytic 47μF 16WV	2
C402		Electrolytic 10μF 16WV	1
C401		Electrolytic 100μF 25WV, Non Polar	1
C785,787 885,887		Electrolytic 220μF 500WV	4
	RESISTORS		
R786,886		Metal Oxide Film 5.6 ohm ±5% 1W	2
R787,887		Metal Oxide Film 10 ohm ±5% 1W	2
R784,785, 884,885		Metal Oxide Film 100 ohm ±5% 1/2W	4
R411		Metal Oxide Film 390 ohm ±5% 2W	1
R401		Carbon Resistor 1k ohm ±5% 1/4W	1
R410		Carbon Resistor 1.2k ohm ±5% 1/4W	1
R782,882		Carbon Resistor 2.7k ohm ±5% 1/4W	2
R409,412		Carbon Resistor 5.6k ohm ±5% 1/4W	2
R402		Carbon Resistor 15k ohm ±5% 1/4W	1
R406,407		Carbon Resistor 18k ohm ±5% 1/4W	2
R788,888		Carbon Resistor 22k ohm ±5% 1/4W	2
R405,781, 783,881, 883		Carbon Resistor 56k ohm ±5% 1/4W	5
R403,404, 408		Carbon Resistor 120k ohm ±5% 1/4W	3
DC POWER PCB ASSY			
232	140-9-230T-66800	Printed Circuit Board Assembly, DC Power	1
	4-237T-00100 / 141-2-382T-07300	or Terminal, Wire Wrapper Pin	19
	141-2-368T-11000	Heat Sink	1
		Tapping Screw 3 x 8 mm	1
Q901		Transistor 2SD386E	1
Q902,903		Transistor 2SD438E	2
D501,502 503,504		Diode 3DZ61	4
D505		Diode DS131B	1
D506		Diode WZ130	1
	CAPACITORS		
C915		Ceramic 0.001μF $^{+80}_{-20}$ % 50WV	1
C901,902, 903,904, 905,906		Ceramic 0.01μF 500WV	6
C911		Electrolytic 220μF $^{+100}_{-10}$ % 16WV	1
C909,910		Electrolytic 470μF $^{+100}_{-10}$ % 50WV	2
C912,913	4-163T-00400 / 4-163T-00471	or Electrolytic 10000μF 50WV	2

Ref. No.	Part No.	Description	Q'ty
DC POWER PCB ASSY			
	RESISTORS		
R905		Metal Oxide Film 5.6 ohm ±5% 1/2W	1
R903,904		Metal Oxide Film 82 ohm ±5% 2W	2
R911		Solid Resistor 100 ohm ±5% 1/2W	1
R910		Solid Resistor 220 ohm ±5% 1/2W	1
R906		Carbon Resistor 2.2k ohm ±5% 1/4W	1
R912		Solid Resistor 2.7k ohm ±10% 1/2W	1
R901,902		Metal Oxide Film 5.6k ohm ±5% 1W	2
R907		Carbon Resistor 6.8k ohm ±5% 1/4W	1
R909		Carbon Resistor 12k ohm ±5% 1/4W	1
R908		Carbon Resistor 22k ohm ±5% 1/4W	1
TUNER PCB ASSY			
235	140-9-230T-56300	Printed Circuit Board Assembly, TUNER	1
	141-2-322T-35500	Shield Plate, VC Mtg.	1
	141-2-322T-40800	Shield Plate	1
S9	4-231T-68600	Switch, Function	1
	4-237T-00100	Terminal, Wire Wrapper Pin	13
P1	4-236T-10271	Plug 4 pin	1
P2	4-236T-10274	Plug 7 pin	1
P3	4-236T-10275	Plug 8 pin	1
L101	4-265T-05100	V.H.F Coil	1
L102	4-265T-03800	V.H.F Coil	1
L103	4-265T-03900	V.H.F Coil	1
L105	4-258T-15500	OSC Coil	1
L106,201, 203	4-253T-08600	Filter 3μH	3
L202	4-253T-09900	Filter	1
T201	4-256T-05140	I.F.T	1
T202	4-256T-10100	I.F.T	1
T203	4-256T-10200	I.F.T	1
CT-3	4-224T-08800	Trimmer	1
	4-224T-08300	Variable Capacitor	1
C0102	123-2-471T-10900	Core	1
T204	4-256T-07871	I.F.T.	1
LPF301, 302	4-255T-01300	MX Coil	2
R306	4-222T-39472	Semi Fixed Resistor 1k (B)	1
R309	4-222T-39474	Semi Fixed Resistor 5k (B)	1
R227	4-222T-39477	Semi Fixed Resistor 50k (B)	1
	4-256T-80500	Red 10.7MHz	
CF201	4-256T-80571	Blue 10.67MHz	
202	4-256T-80572	or I.F. Filter Oringe 10.73MHz	3
203	4-256T-80573	Black 10.64MHz	
	4-256T-80574	White 10.76MHz	
IC101		IC HA-1138	1
IC201		IC LA1230	1
IC301		IC LA3350S	1
Q101		FET 3SK59	1
Q102		Transistor 2SC535B	1
Q103,201		Transistor 2SC930E	2
Q202		Transistor 2SC536G	1
Q301,309		Transistor 2SC536F or G	2
Q310,312		Transistor 2SA702F	2
Q305,306 303		Transistor 2SC945P	3
Q307,308		Transistor 2SC945P or Q	2
Q311,313		Transistor 2SC1571G	2
Q302		Transistor 2SC1571F	1
D101,102 201,301		Diode 1S2473	4
D103,202		Diode 1S188 FM	2
D302,303, 304,306		Diode 1S2472	4
D305		Diode 1S188 AM or 1N60 AM	1
D307		Diode WZ-250	1
D203,204		Diode 1S2473	2

Ref. No.	Part No.	Description	Q'ty
TUNER PCB ASSY			
	CAPACITORS		
C108		Ceramic 2pF ±0.25pF 50WV	1
C106		Ceramic 4pF ±0.25pF 50WV	1
C114		Ceramic 6pF ±0.25pF 50WV N.P.O	1
C101		Ceramic 12pF ±10% 50WV	1
C105,123		Ceramic 12pF ±10% 50WV N750	2
C112		Ceramic 15pF ±5% N.P.O	1
C115		Ceramic 20pF ±5% 50WV N330	1
C113		Ceramic 33pF ±5% 50WV N.P.O	1
C208		Ceramic 33pF ±10% 50WV	1
C216		Ceramic 47pF ±10% 50WV	1
C109		Ceramic 100pF ±10% 50WV	1
C222		Ceramic 220pF ±20% 50WV	1
C103,107		Ceramic 0.001μF ±20% 50WV	2
C102,111, 116,119, 120,125, 201,202, 203,218, 231		Ceramic 0.01μF +80 −20% 50WV	11
C110,124, 213,217		Ceramic 0.022μF +80 −20% 50WV	4
C204,205, 206,210, 211,212, 324		Ceramic 0.047μF +80 −20% 50WV	7
C122		Styrol 300pF ±5% 125WV	1
C309		Styrol 1500pF ±5% 125WV	1
C333,343		Mylar 0.0012μF ±20% 50W	2
C117,121 221		Mylar 0.01μF ±20% 50WV	3
C243		Mylar 0.012μF ±10% 50WV	1
C240		Mylar 0.022μF ±10% 50WV	1
C316		Mylar 0.047μF ±20% 50WV	1
C242,224		Mylar 0.068μF ±20% 20WV	2
C332,347		Mylar 0.01μF ±20% 50W	2
C306,241, 331,341,		Aluminum Electrolytic 0.22μF ±20% 10WV	4
C308		Aluminum Electrolytic 0.33μF ±20% 10WV	1
C307		Aluminum Electrolytic 0.47μF ±20% 10WV	1
C226		Electrolytic 0.47μF +150 −10% 25WV or 50WV	1
C209,230		Electrolytic 1μF +150 −10 % 25WV	2
C207,301		Electrolytic 4.7μF +100 −10% 25WV	2
C118		Electrolytic 10μF +100 −10% 16WV	1
C351,352		Electrolytic 10μF +100 −10% 35WV	2
C223		Electrolytic 33μF +100 −10% 10WV	1
C353		Electrolytic 100μF +100 −10% 10WV	1
C215		Electrolytic 100μF +100 −10% 16WV	1
C350		Electrolytic 100μF +100 −10% 35WV	1
C317		Electrolytic 470μF +100 −10% 16WV	1
C354		Electrolytic 1000μF +100 −10% 16WV	1
C330,340		Electrolytic 330μF +100 −10% 6.3V	2
	RESISTORS		
R103		Carbon Resistor 10 ohm ±5% 1/4W	1
R110,234, 312		Solid Resistor 56 ohm ±10% 1/2W	3
R117,233, 237,356		Carbon Resistor 100 ohm ±5% 1/4W	4
R106,111 206		Carbon Resistor 150 ohm ±5% 1/4W	3
R304		Carbon Resistor 220 ohm ±5% 1/4W	1
R321,331		Carbon Resistor 270 ohm ±5% 1/4W	2
R205,207, 220,322, 332,362		Carbon Resistor 330 ohm ±5% 1/4W	6
R210		Carbon Resistor 470 ohm ±5% 1/4W	1
R225		Carbon Resistor 560 ohm ±5% 1/4W	1
R351		Solid Resistor 680 ohm ±5% 1/2W	1
R107,305		Carbon Resistor 1k ohm ±5% 1/4W	2
R230		Carbon Resistor 1.2k ohm ±5% 1/4W	1
R203,244		Carbon Resistor 1.8k ohm ±5% 1/4W	2
R213,240, 219,221		Carbon Resistor 2.2k ohm ±5% 1/4W	4

Ref. No.	Part No.	Descrption	Q'ty
TUNER PCB ASSY			
R112,115		Carbon Resistor 2.7k ohm ±5% 1/4W	2
R217,302, 320,324, 327,243, 330,334, 337,303, 308		Carbon Resistor 3.3k ohm ±5% 1/4W	11
R222		Carbon Resistor 3.9k ohm ±5% 1/4W	1
R360		Carbon Resistor 4.7k ohm ±5% 1/4W	1
R109,104, 116,228, 242		Carbon Resistor 5.6k ohm ±5% 1/4W	5
R211		Carbon Resistor 6.8k ohm ±5% 1/4W	1
R310,328, 338,246		Carbon Resistor 8.2k ohm ±5% 1/4W	4
R202,352, 307,353, 359		Carbon Resistor 10k ohm ±5% 1/4W	5
R226,229, 113		Carbon Resistor 12k ohm ±5% 1/4W	3
R114,215, 323,333		Carbon Resistor 15k ohm ±5% 1/4W	4
R204		Carbon Resistor 18k ohm ±5% 1/4W	1
R209,311		Carbon Resistor 22k ohm ±5% 1/4W	2
R208		Carbon Resistor 27k ohm ±5% 1/4W	1
R105		Carbon Resistor 33k ohm ±5% 1/4W	1
R108,218, 355		Carbon Resistor 39k ohm ±5% 1/4W	3
R357,238		Carbon Resistor 47k ohm ±5% 1/4W	2
R358		Carbon Resistor 82k ohm ±5% 1/4W	1
R101,212, 245,223, 361,326, 336		Carbon Resistor 100k ohm ±5% 1/4W	7
R354		Carbon Resistor 330k ohm ±5% 1/4W	1
R241		Carbon Resistor 150M ohm ±5% 1/4W	1
MIC AMP PCB ASSY			
236	140-9-230T-67200	PCB assy, MIC AMP	1
	4-235T-36700	Socket, MIC	1
	141-2-322T-41500	Shield plate, Mic socket	1
Q721,722		Transistor 2SC1571 G	2
	CAPACITORS		
C727		Electrolytic 100μF 35V	1
C722,726		Electrolytic 4.7μF 25V	2
C725		Electrolytic 47μF 10V	1
C721		Ceramic 680pF ± 10% 50V	1
C724		Ceramic 100pF ± 10% 50V	1
C723		Ceramic 220pF ± 5% 50V	1
	RESISTORS		
R726		Carbon 330k ohm ± 5% 1/4W	1
R725		Carbon 220 ohm ± 5% 1/4W	1
R729		Carbon 150k ohm ± 5% 1/4W	1
R723		Carbon 100k ohm ± 5% 1/4W	1
R728		Carbon 4.7k ohm ± 5% 1/4W	1
R727		Carbon 820 ohm ± 5% 1/4W	1
R724		Carbon 560 ohm ± 5% 1/4W	1
R722		Carbon 1K ohm ± 5% 1/4W	1
R721		Carbon 10k ohm ± 5% 1/4W	1
R731		Carbon 560 ohm ±5% 1/4W	1
PHONO AMP PCB ASSY			
237	140-9-230T-67100	PCB assy, PHONO AMP	1
	4-235T-48400	Socket RCA type, PHONO, AUX, REC, TAPE	2
	4-231T-63700	Switch	1
	141-2-310T-08200	Bracket, Jack	1
	4-235T-45900	Socket	1
	4-237T-00100	Terminal board } or	23
	141-2-382T-07300	Terminal } or	
IC701,801		IC TA7129 P	2

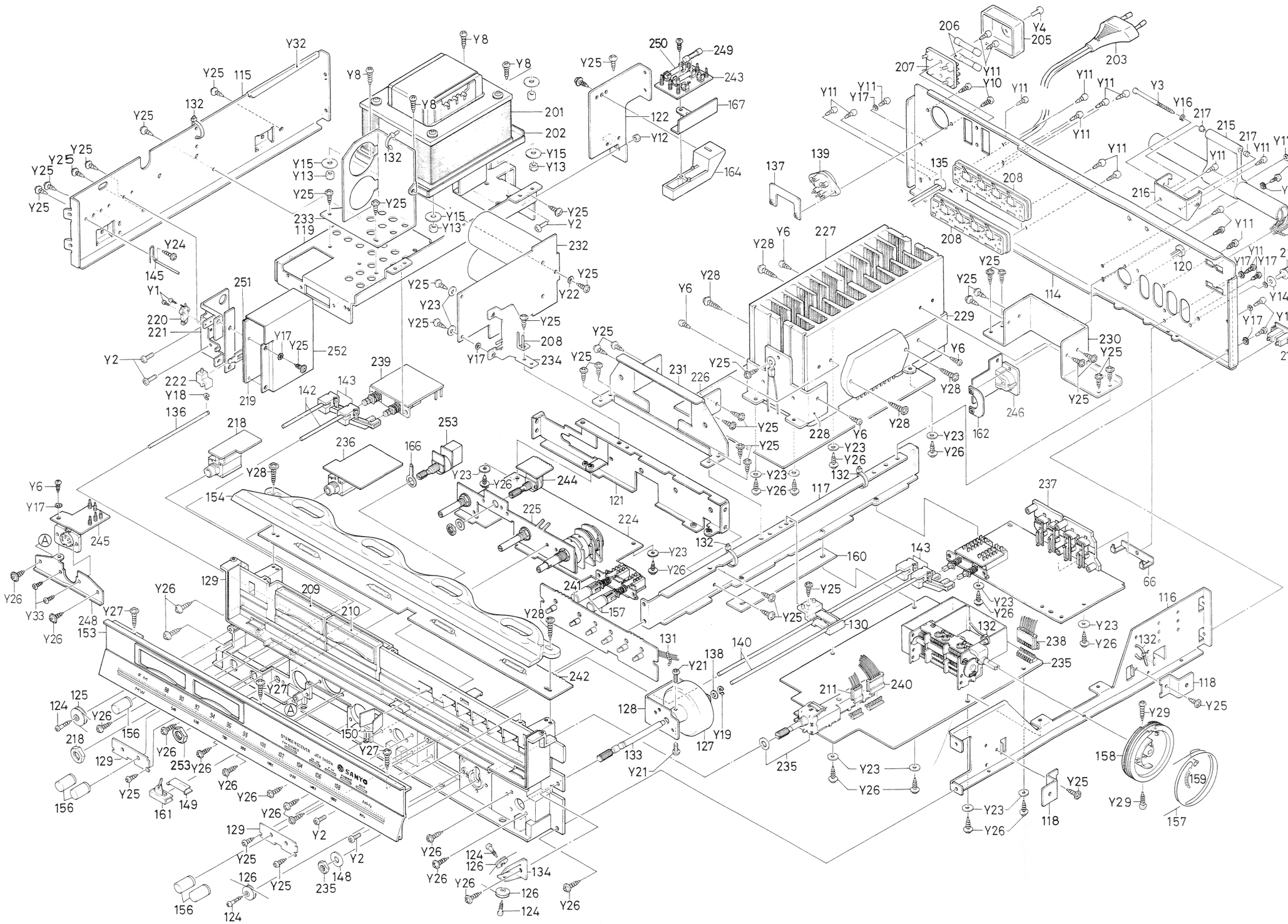
Ref. No.	Part No.	Description	Q'ty
PHONO AMP PCB ASSY			
	CAPACITORS		
C712,713		Ceramic 0.01μF +80 −20% 50V	2
C704,804		Ceramic 470pF ±10% 50V	2
C701,801 703,803		Ceramic 47pF ±10% 50V	4
C714		Ceramic 0.047μF +80 −20% 50V	1
C708,808		Mylar 0.022μF ±5% 50V	2
C706,806		Mylar 0.0039μF ±5% 50V	2
C707,807, 709,809		Mylar 0.0033μF ±5% 50V	4
C711		Electrolytic 470μF 50V	1
C705,805		Electrolytic 47μF 6.3V	2
C702,802		Electrolytic 4.7μF 25V	2
C701,810		Electrolytic 1μF 50V	2
	RESISTORS		
R703,803		Carbon 270k ohm ±5% 1/4W	2
R705,805		Carbon 180k ohm ±5% 1/4W	2
R709,809, 710,810		Carbon 100k ohm ±5% 1/4W	4
R702,802		Carbon 68k ohm ±5% 1/4W	2
R708,808		Carbon 27k ohm ±5% 1/4W	2
R707,807		Carbon 10k ohm ±5% 1/4W	2
R711,811		Carbon 6.8k ohm ±5% 1/4W	2
R701,801		Carbon 2.2k ohm ±5% 1/4W	2
R706,806		Carbon 470 ohm ±5% 1/4W	2
R704,804		Carbon 220 ohm ±5% 1/4W	2
R712,812		Carbon 27k ohm ±5% 1/4W	2
SPEAKER PCB ASSY			
239	140-9-230T-30600	Printed Circuit Board Assembly, Speaker	1
	4-231T-63600	Push Switch	1
	4-237T-00100	Terminal, Wire Wrapper Pin	12
INDICATOR PCB ASSY			
241	140-9-230T-30200	Printed Circuit Board Assembly, Indicator Lamp	1
	4-612T-08100	Lamp, Function 6.3V 65mA	4
	4-612T-08200	Lamp, Stereo 6.0V 30mA	1
	4-237T-00100	Terminal, Wire Wrapper Pin	9
DIAL LAMP PCB ASSY			
242	140-9-230T-30300	Printed Circuit Board Assembly, Dial Lamp	1
	4-612T-07371	Lamp	4
	4-237T-00171	Terminal, Wire Wrapper Pin	5
FUSE HOLDER PCB ASSY			
243	140-9-230T-67300	Printed circuit board assembly, FUSE HOLDER	1
	4-237T-00171	Terminal board	6
MID VOLUME PCB ASSY			
244	140-9-230T-65100	PCB assy, MID VOLUME	1
	4-222T-58800	Variable resistor 100-B x2	1
DIN SOCKET PCB ASSY			
245	140-9-230T-74600	PCB assy, DIN SOCKET	1
	4-235T-48300	Socket, DIN	1
	4-237T-00171	Terminal board	6
C742,842		Ceramic capacitor 100pF ±10% 50V	2
R742,842		Carbon resistor 270k ohm ±5% 1/4W	2

PARTS LIST

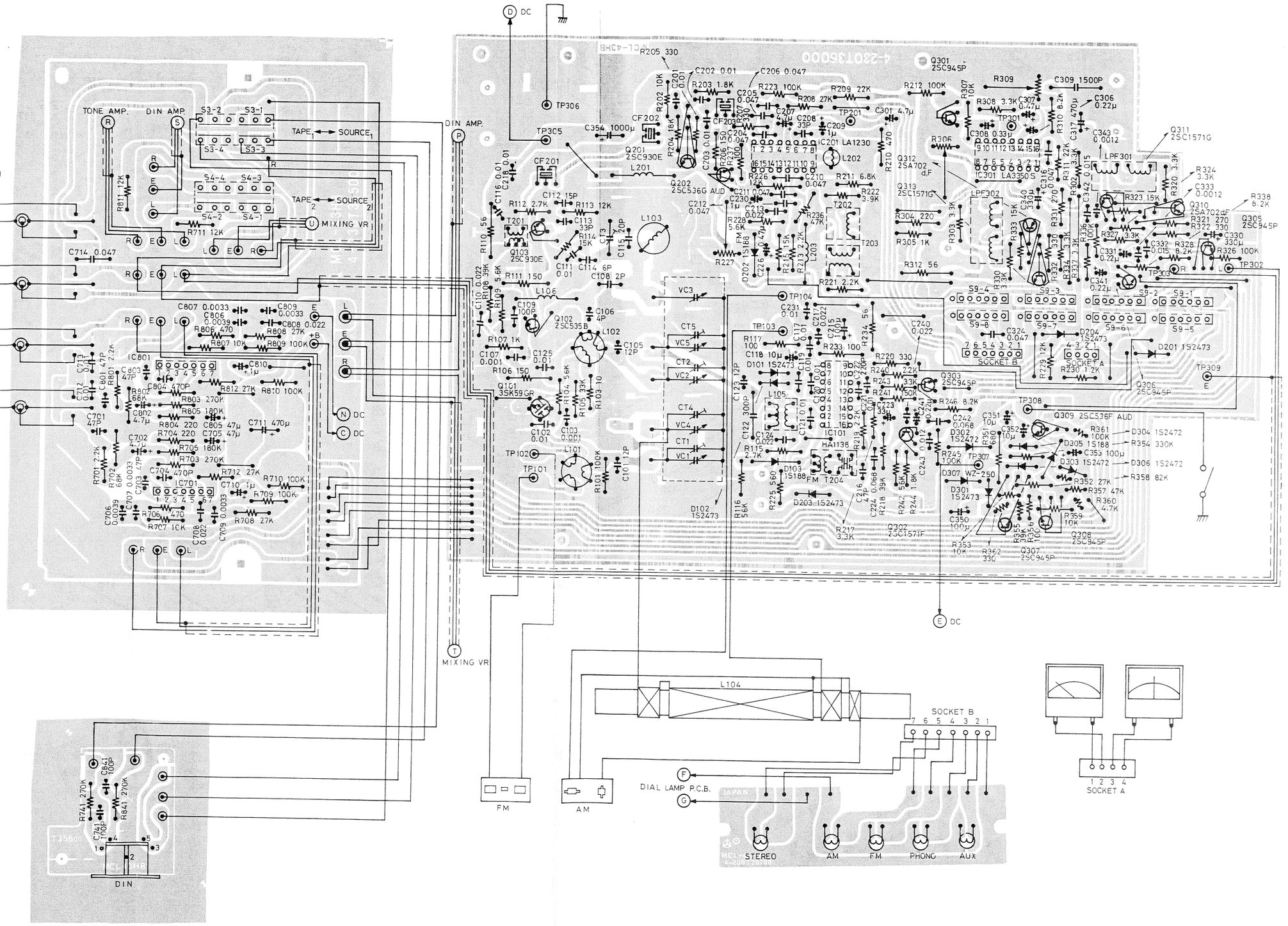
Ref. No.	Part No.	Description	Q'ty
DIN SOCKET PCB ASSY			
246	140-9-230T-74601	PCB assy, DIN SOCKET	1
	4-235T-48300	Socket, DIN	1
	4-237T-00171	Terminal board	6
C741,841		Ceramic capacitor 100pF 50V ±10% 50V	2
			2
R741,841		Carbon resistor 270k ohm ±5% 1/4W	2
SCREW MOUNTING			
Y1		Pan Head Screw 2 x 8 mm	2
Y2		Pan Head Screw 3 x 6 mm	6
Y3		Pan Head Screw 3 x 50 mm	1
Y4		Binding Head Pan Head Screw 3 x 8 mm	2
Y5		Tapping Screw 3 x 6 mm	11
Y6		Tapping Screw 3 x 8 mm	7
Y7		Tapping Screw 3 x 12 mm	1
Y8		Tapping Screw 4 x 8 mm	4
Y9		Round Head Wood Screw 3.1 x 10 mm	12
Y10		Binding Head Tapping Screw 3 x 12 mm	2
Y11		Binding Head Tapping Screw 3 x 10 mm	22
Y12		Nut 3 mm	1
Y13		Nut 4 mm	4
Y14		Washer 3.3 x 10 x 1 mm	1
Y15		Washer 4.5 x 13 x 1.2 mm	8
Y16		Spring Washer 3 mm	1
Y17		External Tooth Lock Washer 3 mm	9
Y18		External "E" Ring 2.5 mm	1
Y19		External "E" Ring 3 mm	1
Y20		Headless Screw with Hexagon Hole 3 x 4 mm	4
Y21		Pan Head Screw with Hexagon Hole 3 x 6 mm	2
Y22		Fiber Washer 3 x 10 x 0.8 mm	1
Y23	141-2-435T-01700	Fiber Washer 3 x 10 x 1 mm	13
Y24		Tapping Screw with Washer 3 x 4 mm	1
Y25		Tapping Screw with Washer 3 x 8 mm	43
Y26		Tapping Screw with Washer 3 x 10 mm	31
Y27		Tapping Screw 3 x 12 mm	7
Y28		Tapping Screw 3 x 16 mm	6
Y29		Thread Rolling Screw 3 x 12 mm	2
Y30		Thread Rolling Screw 4.5 x 16 mm	4
Y31		UL Tape 12 x 40 mm	1
Y32		UL Tape 12 x 70 mm	1
Y33		Tapping Screw 2.3 x 6 mm	2

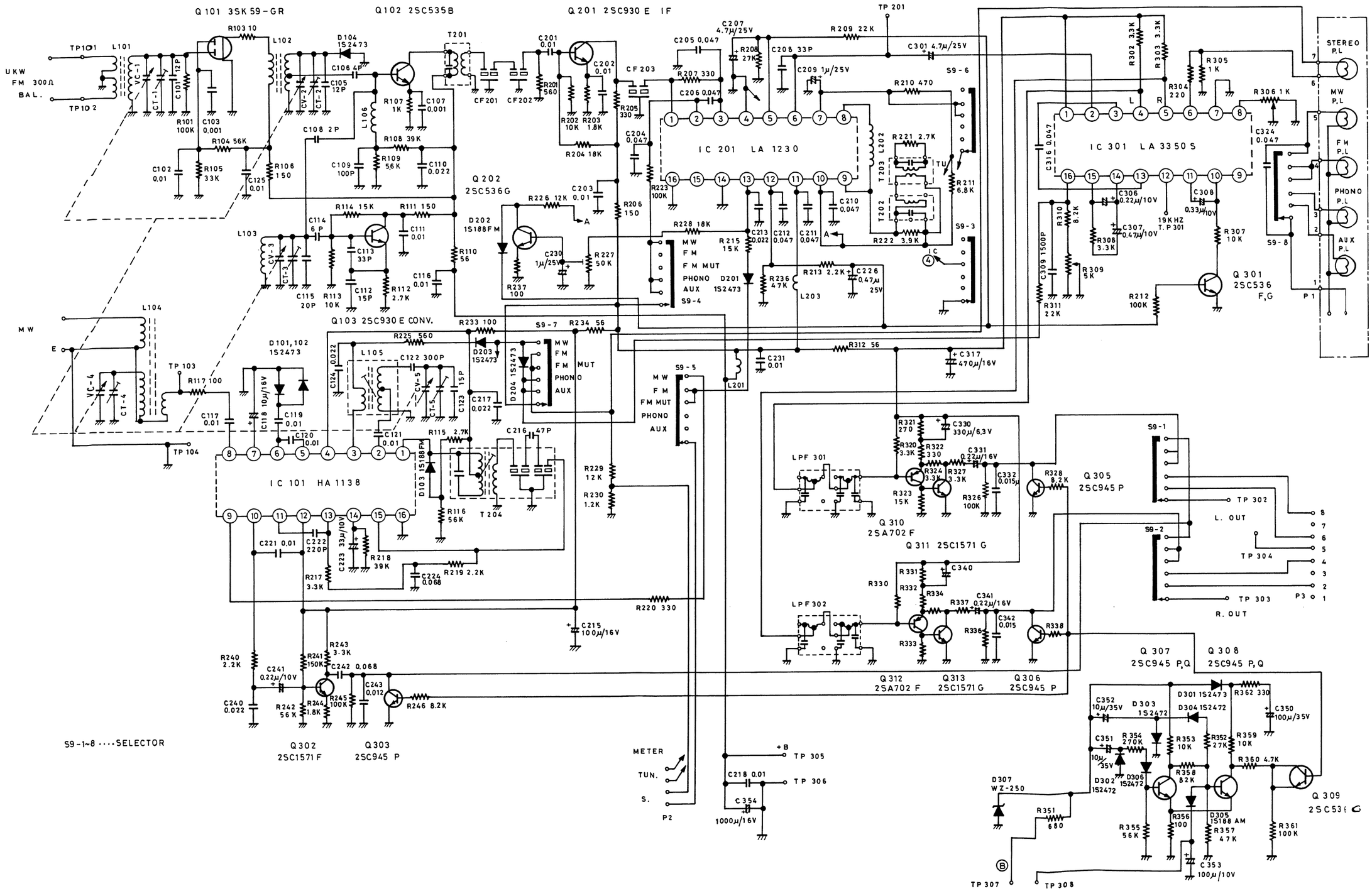
MEMO

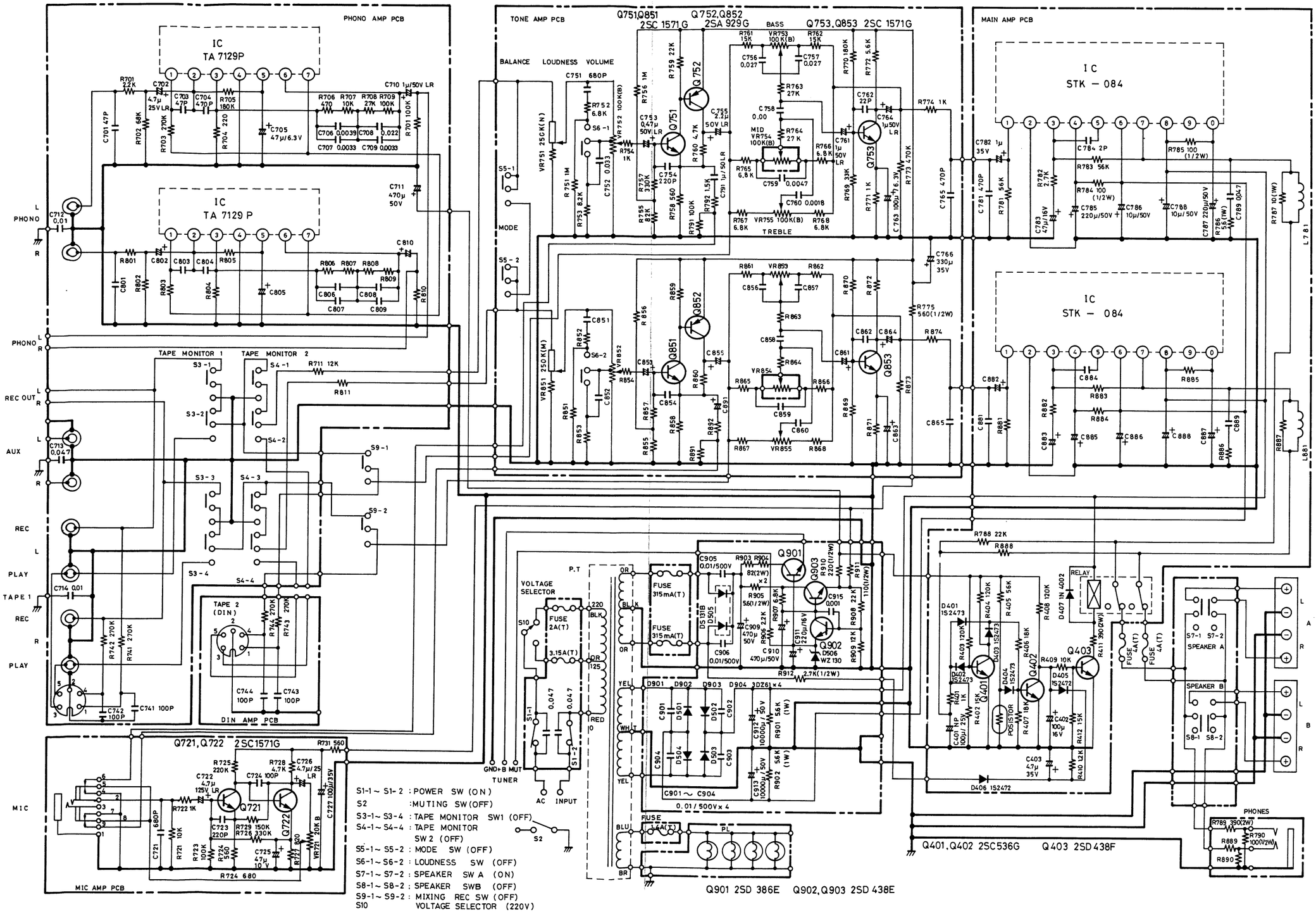
CHASSIS EXPLODED VIEW



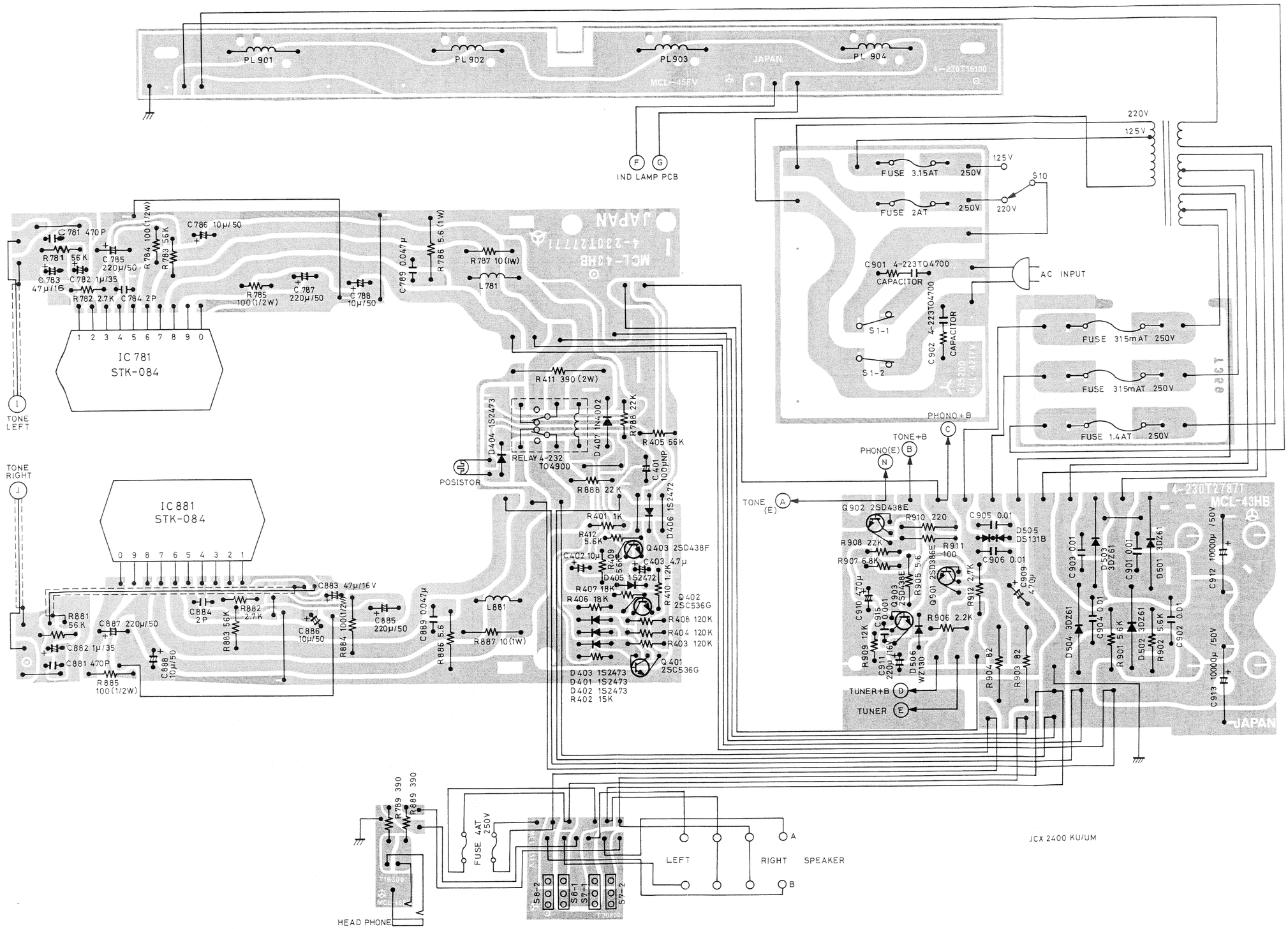
WIRING DIAGRAM (TUNER)



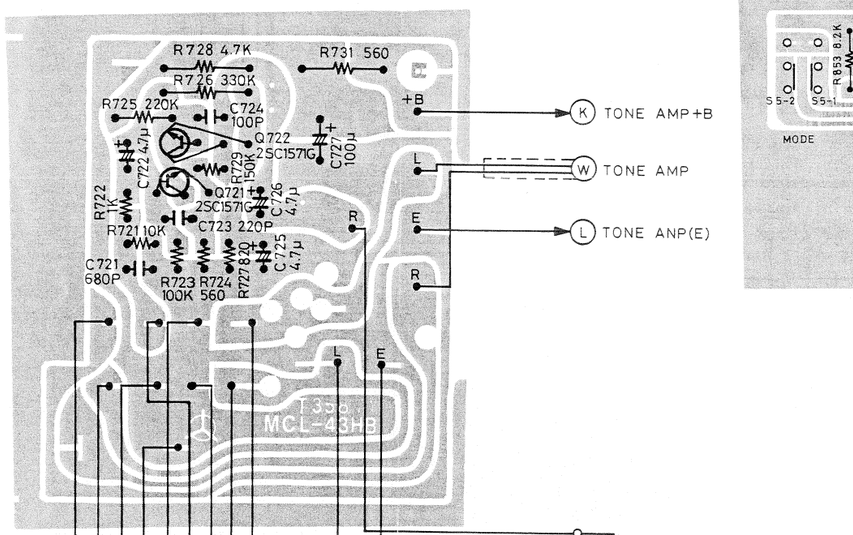

Q101 3SK59-GR
Q102 2SC535B
Q201 2SC930E IF
TP201
UKW FM 300Ω BAL.
TP101
TP102
L101
L102
R103 10
D104 1S2473
T201
C201 0.01
C202 0.01
CF203
CF201
CF202
C205 0.047
C207 4.7μ/25V
R208 27K
R209 22K
C208 33P
C209 1μ/25V
C301 4.7μ/25V
S9-6
R207 330
C206 0.047
R210 470
R201 560
R202 10K
R203 1.8K
R204 18K
R205 330
C204 0.047
IC 201 LA 1230
R221 2.7K
T203 L202
T202
TU
R211 6.8K
R222 3.9K
S9-3
IC
R223 100K
C210 0.047
C211 0.047
C213 0.022
C212 0.047
R215 15K
R228 18K
MW
FM
FM MUT
PHONO
AUX
S9-4
D201 1S2473
R236 47K
L203
R213 2.2K
C226 0.47μ 25V
R101 100K
C103 0.001
C101 12P
VC-1
CT-1
CV-2
CT-2
C106 4P
C105 12P
C108 2P
L106
R107 1K
C107 0.001
R108 39K
R109 56K
C109 100P
C110 0.022
R104 56K
C102 0.01
R105 33K
C125 0.01
R106 150
Q202 2SC536G
R226 12K
C203 0.01
R206 150
D202 1S188FM
C230 1μ/25V
R227 50K
R237 100
L103
C114 6P
C111 0.01
R114 15K
R111 150
C113 33P
C112 15P
R112 2.7K
C115 20P
R113 10K
C116 0.01
R110 56
CV-3
CT-3
L104
MW
E
VC-4
CT-4
TP103
R117 100
C117 0.01
C118 10μ/16V
C119 0.01
C120 0.01
TP104
Q103 2SC930E CONV.
R233 100
S9-7
R234 56
R225 560
L105
C122 300P
C124 0.022
CV-5
CT-5
C123 15P
C217 0.022
D203 1S2473
D204 1S2473
MW
FM
FM MUT
PHONO
AUX
D101,102 1S2473
C121 0.01
R115 2.7K
C216 47P
D103 1S188FM
T204
R116 56K
IC 101 HA 1138
R229 12K
R230 1.2K
C222 220P
C221 0.01
C223 33μ/10V
R218 39K
R217 3.3K
C224 0.068
R219 2.2K
R220 330
C215 100μ/16V
R240 2.2K
R241 150K
R243 3.3K
C241 0.22μ/10V
C242 0.068
C243 0.012
C240 0.022
R242 56K
R244 1.8K
R245 100K
R246 8.2K
S9-1~8 ····SELECTOR
Q302 2SC1571F
Q303 2SC945P
METER
TUN.
S.
P2
+B
TP305
C218 0.01
TP306
C354 1000μ/16V
R312 56
C231 0.01
L201
C317 470μ/16V
S9-5
MW
FM
FM MUT
PHONO
AUX
LPF301
Q310 2SA702F
Q311 2SC1571G
R321 270
R320 3.3K
R322 330
C330 330μ/6.3V
C331 0.22μ/16V
R324 3.3K
R327 3.3K
R323 15K
C332 0.015μ
R326 100K
R328 8.2K
Q305 2SC945P
LPF302
Q312 2SA702F
Q313 2SC1571G
Q306 2SC945P
R330
R331
R332
C340
R334
R337 0.22μ/16V
C341
R336
C342 0.015
R338
Q307 2SC945P,Q
Q308 2SC945P,Q
D307 WZ-250
R351 680
TP307
TP308
C352 10μ/35V
D303 1S2472
D301 1S2473
D304 1S2472
R362 330
C350 100μ/35V
C351 10μ/35V
R354 270K
D302 1S2472
D306 1S2472
R353 10K
R352 27K
R359 10K
R358 82K
R360 4.7K
Q309 2SC536
R355 56K
R356 100
D305 1S188AM
R357 47K
C353 100μ/10V
R361 100K
S9-1
TP302
L. OUT
S9-2
TP304
TP303
R. OUT
P3
R302 3.3K
R303 3.3K
R305 1K
R304 220
R306 1K
C324 0.047
C316 0.047
IC 301 LA 3350S
L
R
C306 0.22μ/10V
C308 0.33μ/10V
19KHZ T.P301
R307 10K
C307 0.47μ/10V
R310 8.2K
R308 3.3K
C309 1500P
R309 5K
R311 22K
R212 100K
Q301 2SC536 F,G
STEREO P.L
MW P.L
FM P.L
PHONO P.L
AUX P.L
S9-8
P1

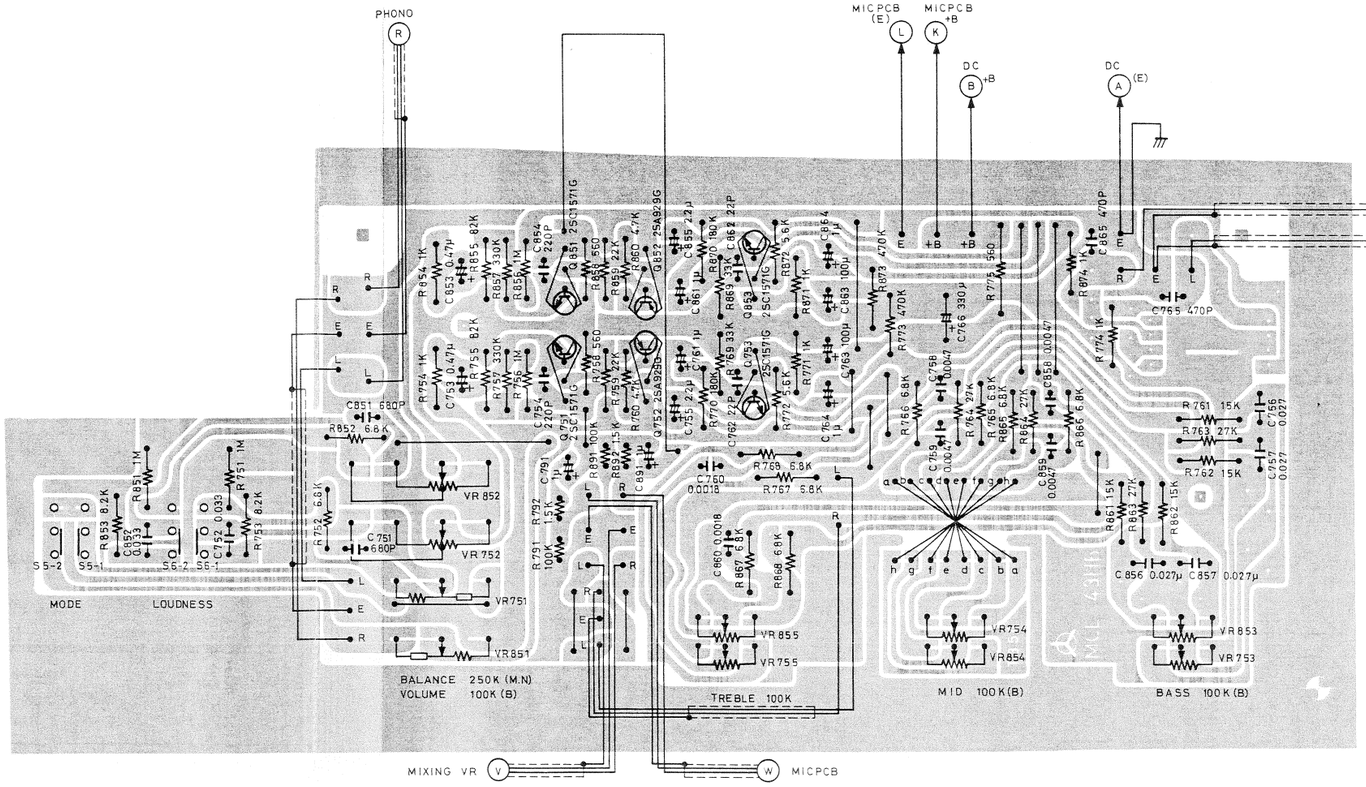

PHONO AMP PCB
IC
TA 7129P
IC
TA 7129 P
TONE AMP PCB
Q751,Q851
2SC 1571 G
Q752,Q852
2SA 929G
Q753,Q853 2SC 1571G
BASS
BALANCE
LOUDNESS
VOLUME
TREBLE
MODE
MAIN AMP PCB
IC
STK – 084
IC
STK – 084
PHONO
REC OUT
AUX
REC
PLAY
TAPE 1
TAPE MONITOR 1
TAPE MONITOR 2
TAPE 2
(DIN)
DIN AMP PCB
MIC
Q721,Q722 2SC1571G
MIC AMP PCB
VOLTAGE
SELECTOR
FUSE
2A(T)
3.15A(T)
FUSE
315mA(T)
FUSE
4A(T)
PL
TUNER
AC INPUT
S2
RELAY
SPEAKER A
SPEAKER B
PHONES
Q401,Q402 2SC536G
Q403 2SD438F
Q901 2SD 386E
Q902,Q903 2SD 438E
S1-1 ~ S1-2 : POWER SW (ON)
S2 : MUTING SW(OFF)
S3-1 ~ S3-4 : TAPE MONITOR SW1 (OFF)
S4-1 ~ S4-4 : TAPE MONITOR SW 2 (OFF)
S5-1 ~ S5-2 : MODE SW (OFF)
S6-1 ~ S6-2 : LOUDNESS SW (OFF)
S7-1 ~ S7-2 : SPEAKER SW A (ON)
S8-1 ~ S8-2 : SPEAKER SWB (OFF)
S9-1 ~ S9-2 : MIXING REC SW (OFF)
S10 VOLTAGE SELECTOR (220V)

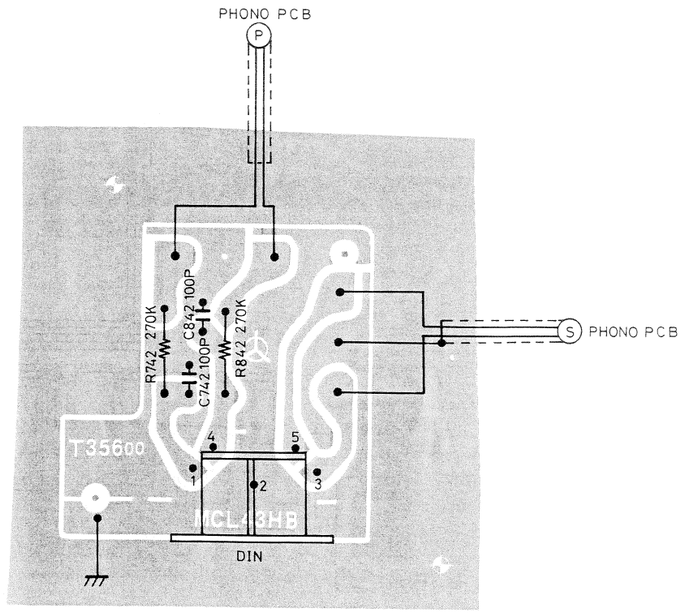
WIRING DIAGRAM (AMP)



WIRING DIAGRAM (PRE AMP.)







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Jan/'78/1100 HA Printed in Japan